



DMSO MSRR Program

FY-99 and Beyond

LTC Harry Thompson, USA
Chief, Operations Division
Defense Modeling and Simulation Office
02 September 1998



Why Build the MSRR?

- ❑ **Many of the resources created in support of DoD modeling and simulation are reusable to some degree**
- ❑ **A resource is only reusable if it can be discovered by a potential user**
- ❑ **The fewer places a user has to go to search for resources, the better**



The MSRR Mission

- ❑ **Facilitate sharing and reuse by:**
 - * **providing a service whereby resources of interest to the DoD M&S community may be cataloged by their owners, and discovered by other potential users who search the catalog**
 - ▢ **providing a convenient way for DoD users to search classified and unclassified networks for resources which may be of use to them**
 - ▢ **provide a way for users to contribute to the resource pool**



MSRR History

- ❑ **Original MSRR proposal dates from 1993**
- ❑ **Some other repositories were already in existence
(ex: NASA reuse repository)**
- ❑ **Original intent, endorsed by the DRTWG, was for a unitary system, supporting all of DoD**
- ❑ **Technology, and service/component desires, have evolved**



MSRR Current Snapshot

- ❑ **System is operational (unclassified and classified)**
 - ✱ **Help desk/registration**
 - ▢ **new development is complete**
 - ▢ **some enhancement/follow-up**
 - ▢ **sparsely populated (very slow growth)**
 - ▢ **lots of interest/lots of dependence**
 - ▢ **few “clean” searches**
 - ▢ **few “true” individual resources/mostly links**
- ❑ **Problems/Challenges**
 - ▢ **System design/structure**
 - ▢ **currency of resources**
 - ▢ **discovery and access to resources**
 - ▢ **linkage, not registration of resources**
 - ▢ **user “mutiny”**



MSRR Current Snapshot

(cont'd)

- ✱ **large difference in repository make-up (user base)**
 - ▮ **MSRR vs MEL population business rules**
 - ▮ **heavy logistics/support tail**
 - ▮ **users believe in concept, just not implementation**
- ❑ **Future endstate of current path**
 - ▮ **High user expectations**
 - ▮ **Low product delivery**
 - ▮ **continued sparse population**
 - ▮ **few users of DMSO supplied software**
 - ❖ **main system software**
 - ❖ **security software**
 - ▮ **large sustainment costs**
 - ▮ **Basically, will die of user expectations, lack of resources, difficult of use and large support tail**



The Facts of Life

- ❑ **There are many DoD repositories already in existence, with new ones being developed each year**
- ❑ **Most were created to support a particular constituency**
- ❑ **Some have domain specific interfaces (ex: the MEL geospatial query interface), C4ISR DSC**
- ❑ **Most must retain their unique character in order to properly serve their customer base (ex: C4ISR related data on models)**



The Facts of Life

(cont'd)

- ❑ **Users of these specialized repositories must enter and manipulate multiple repositories in order to conduct a thorough search for M&S resources**
- ❑ **A single entry point search will not necessarily solve a query (even a service specific query), if the query interface is unable to reach all (or at least many) of the potential systems holding the information which the user is seeking**



MSRR Challenges Ahead

- ❑ **Population of resources**
- ❑ **Sharing of and access to resources**
- ❑ **Expanding discovery capability and awareness of available resources**
- ❑ **User involvement and requirements review**
- ❑ **Sustaining evolving commercial technology integration**
- ❑ **Expanding usage to international and commercial sector**



Focus of “New” MSRR

- ❑ **The focus of the “new” MSRR should be on:**
 - ✱ **interoperability between repositories (standards)**
 - ❑ **common services**
 - ❑ **providing discovery of M&S-related resources**
 - ❑ **populating via assimilation**
 - ❑ **certification of interoperability**
 - ❑ **clearly defining DoD role and DMSO role**
 - ❑ **reducing sustaining tail for all system**



A Possible Future Direction for the MSRR

- ❑ Coalition of “peer” nodes linked via WWW protocols
- ❑ Unclassified and classified capability
- ❑ An interface specification to allow nodes to link, search, discover access and provide resources (individual nodes focus development efforts downward and build to common standard higher linkage).
- ❑ Set of common tools and services (e.g., search engines, security programs, converters)
- ❑ DoD MSRR program focus on common products and standards
- ❑ DMSO would have “peer” node for OSD and others resources
- ❑ Possible central node (supported by DMSO) to support common tools/services, but not catalog function
- ❑ No hierarchical repository structure

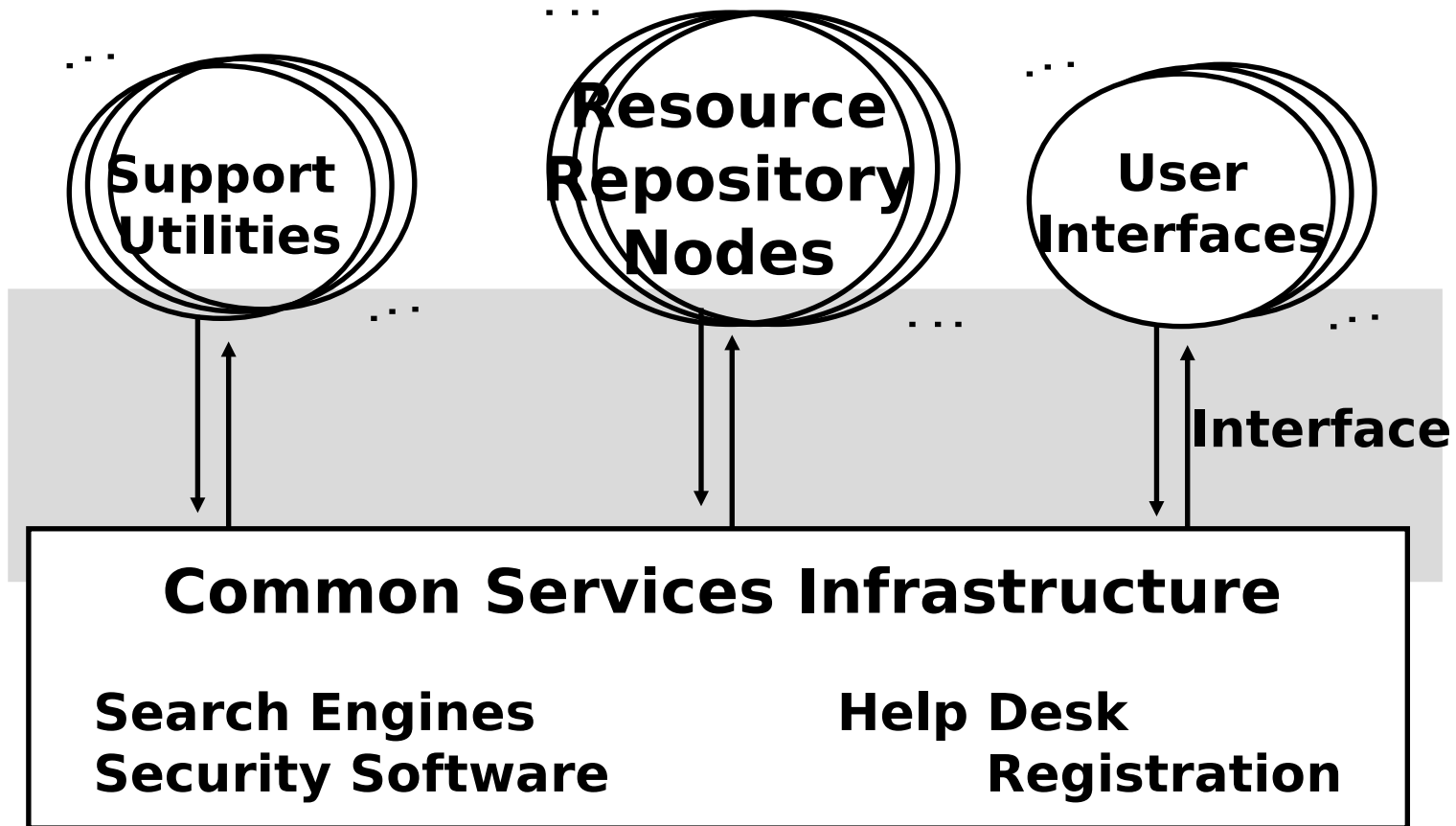


MSRR Definitions

- ❑ **MSRR - “The System”**
 - ❑ **Coalition of resource repositories connected via the WWW using the WWW protocols, set of common rules, an interface specification, and resource templates (RTs) facilitated by a common set of services (i.e., registration, security, search engines, help desk)**
- ❑ **RRN - “Resource Repository Node”**
 - ❑ **The systems that contain the resources and comply with MSRR framework (rules, interface specification, resource template). These systems may be central or distributed in nature (may consist of separate “libraries” contained under the overall node).**



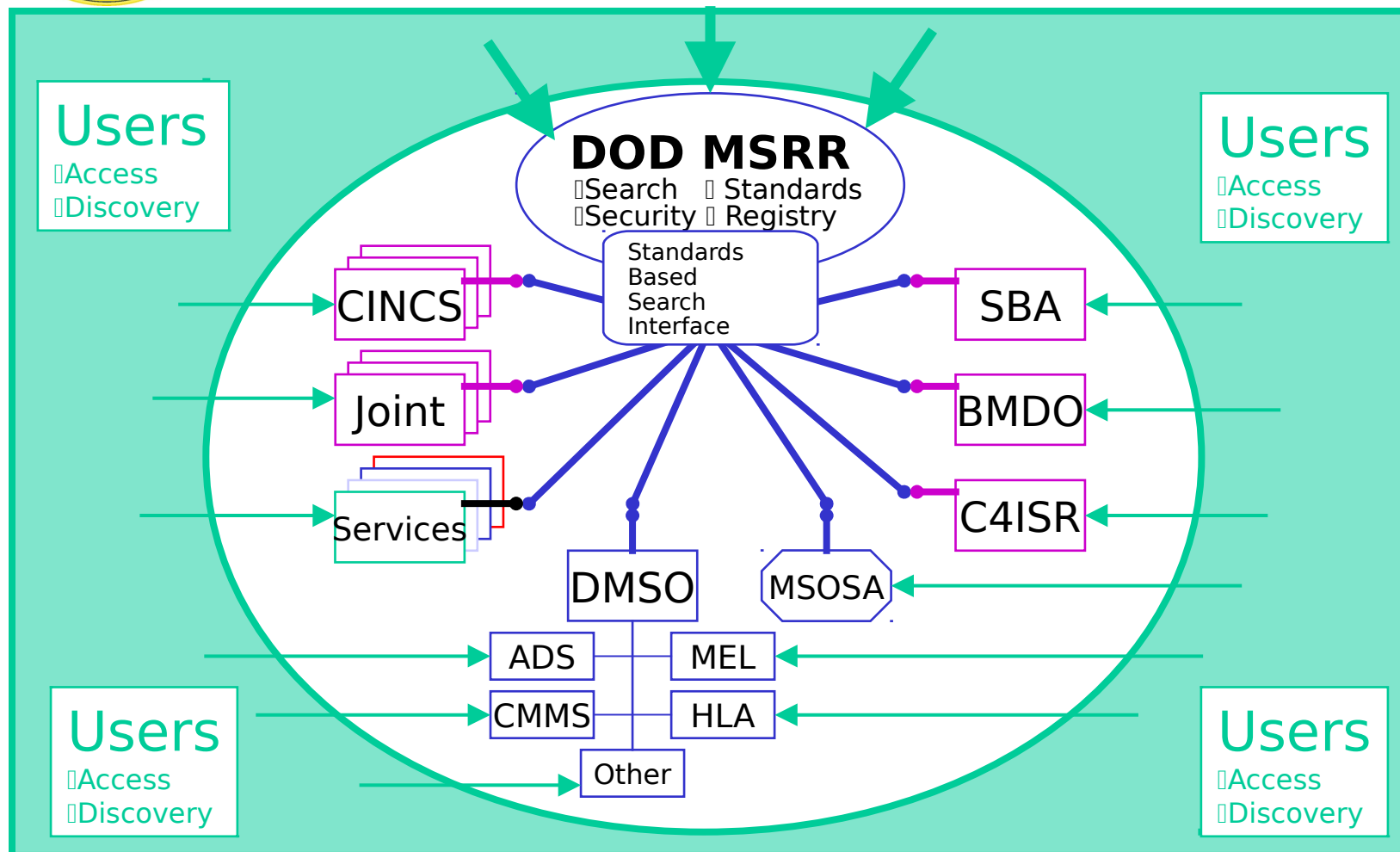
Functional View of the MSRR Framework





DoD MSRR

Standards Based Search





Defining the MSRR Framework

□ The MSRR framework is defined by:

▮ MSRR Rules

- ❖ The rules describe the general principles of the MSRR system and list the basic rules that apply to legacy and future MSRR system nodes. These rules are the official node guidelines to be followed by MSRR systems nodes in order for common services to be implemented that will support a distributed discovery of resources across the distributed MSRR system.

* MSRR Interface Specification

- ❖ The interface specification defines the common services that shall be available on each MSRR on each MSRR system node to support distributed discovery of resources across the distributed MSRR system. The software functionality described in this specification will focus on the software interchange functions that will be required as part of the common services hosted by the individual MSRR system nodes.

▮ Repository Template

- ❖ The repository template will record the basic set of required registration level information for discovering resources across the distributed MSRR system. This template is a single data format that each node will use when interchanging their data with other nodes of the distributed MSRR.

□ These three elements commonly applicable across all DoD M&S related resource repositories, provide a common framework within which specific system architectures can be defined.



Possible MSRR Type “Rules”

- ❑ **All RRNs must be assessable via a single password/USERID**
- ❑ **All RRNs must have an A&A function**
- ❑ **Search must be feasible to discover any resource within a RRN**
- ❑ **Must use a single Repository Template (RT)**
- ❑ **Approved/Certified/Recognized information ranks higher in search**



Rationale for MSRR Framework Design

- ❑ **Basic premises:**
 - * **No single, monolithic resource repository system can satisfy the needs of all users**
 - ❑ **All uses of resource repositories and useful ways of combining them cannot be anticipated in advance**
 - ❑ **Future technological capabilities and a variety of operating configurations must be accommodated**
 - ❑ **To promote reuse, population of resources must be easy to user**
 - ❑ **Most current resources are owned and maintain by users**
- ❑ **Consequence: Need composable approach to constructing a coalition of repositories**
- ❑ **Resulting design principles:**
 - ❑ **Coalitions of nodes constructed from modular libraries with well-defined functionality and interfaces**
 - ❑ **Specific node functionality separated from general purpose supporting common services infrastructure**



FY-99 Thrust

- ❑ **Stand up MSRR Technical Support Team (TST)**
- ❑ **Identify standards**
- ❑ **Develop proposed coalition architecture**
- ❑ **Begin interoperability experiments with other, cooperating repositories**



FY-00 Thrust

- ❑ **Conclude interoperability experiments**
- ❑ **Approve baseline architecture for M&S repositories within DoD**
- ❑ **Invite other repositories within the M&S community to join the coalition**



FY-00 Thrust

(cont'd)

- ☐ **Define interoperability among federated repositories**
- ☐ **Develop structured tests to confirm interoperability**
- ☐ **This approach is similar to that which was used successfully in the HLA-AMG**



TST Composition and Charter

- ❑ **The TST will function as part of the MSRR program office**
- ❑ **MSRR system engineer will be the technical lead on the TST**
- ❑ **Desire technical personnel from systems with which the MSRR will conduct interoperability experiments to sit on the TST during the experiments**
- ❑ **TST will be focused on functionality development:**
 - ✳ **Of interoperability standards and rules**
 - ▮ **Prototyping these standards for the DoD MSRR effort**



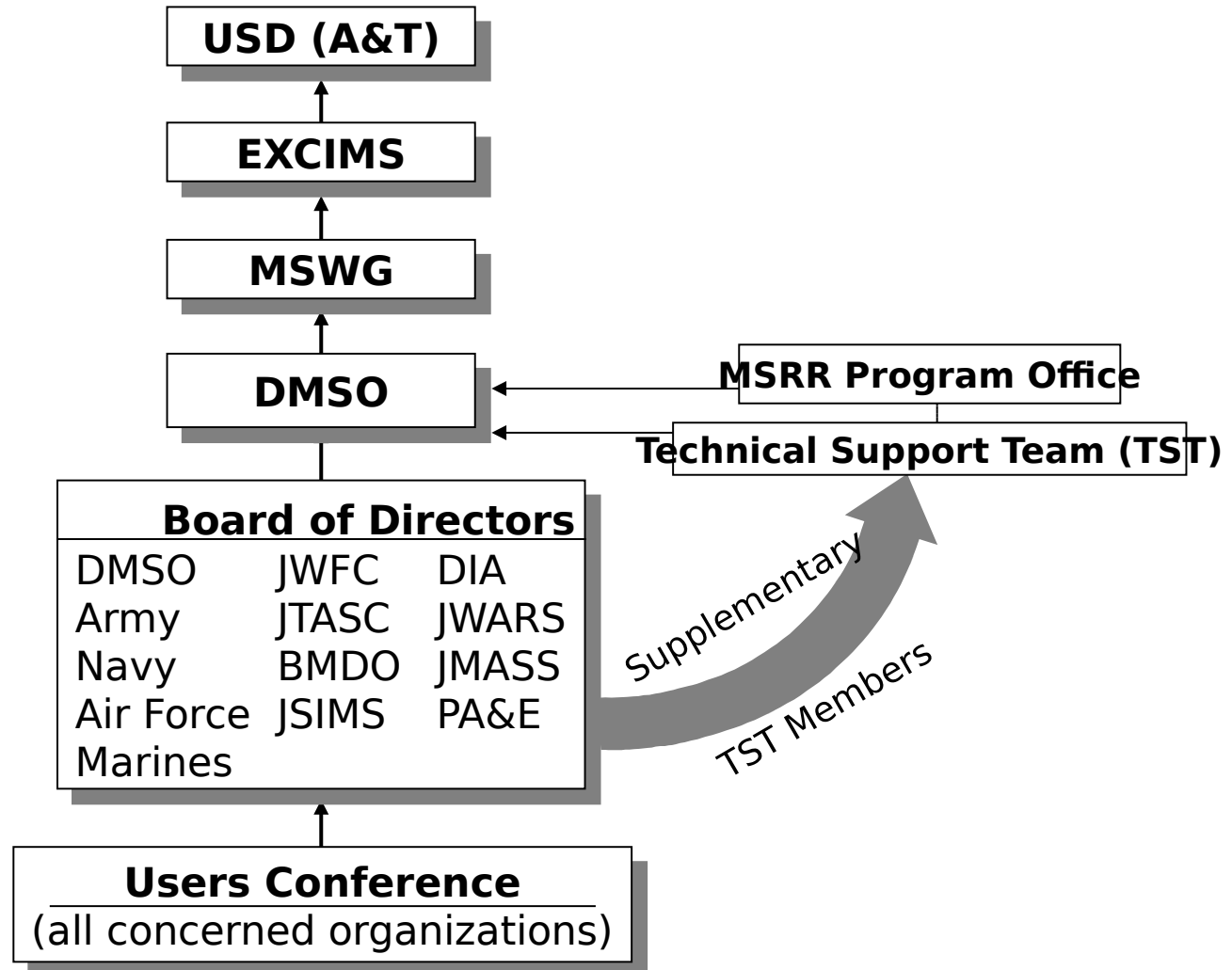
TST Composition and Charter

(cont'd)

- ❑ **TST membership will change as interoperability experiments change**
- ❑ **Buy-in for the basic concept**
- ❑ **Commitment to participate in interoperability experiments**



MSRR Evolving Through an Integrated Product Team Structure





Benefits of “new” approach

- ❑ **Wide population of MSRR**
- ❑ **Currency of resources**
- ❑ **User flexibility**
- ❑ **Interoperability between any type node**
- ❑ **Defined standards**
- ❑ **Users can “have it their way”**
- ❑ **Certification**
- ❑ **Reduction of sustainment tail for all**
- ❑ **Maintains DMSO leadership and Master Plan responsibilities**



Policy Note

- ❑ **The MSRR community reserves the right to publish metadata, at the DoD MSRR level, on any resource which is not publicly, and completely described by the sponsor's repository.**
- ❑ **Examples: unofficial, but widely used versions of models (e.g. EADSIM) and use histories of models, which may not be available to the sponsor.**
- ❑ **The MSRR community will not duplicate data already provided by the sponsor on any resource.**



Discussion





Back-up



What Is a Resource?

- ❑ **A resource is anything that can be cataloged (described in writing), and has potential for reuse in M&S, typically (but not limited to):**
 - * **A model or simulation**
 - ▢ **A database or data source**
 - ▢ **A tool, such as a data transformation tool**
 - ▢ **A document, such as software or standards documentation**
 - ▢ **A report**
- ❑ **Is the above our best list? (What else??)**



What Is a Resource

(cont'd)

- ❑ **Some resources may be cataloged, but not available on line due to size or disclosure restrictions**
- ❑ **We don't treat documents of a transitory nature, as resources, e.g.:**
 - ❑ **Meeting minutes**
 - ❑ **Schedules, etc.**